



Michigan Refining Division

Marathon Petroleum Company LP

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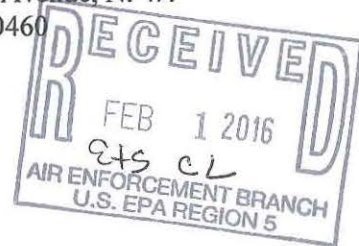
VIA ELECTRONIC COPY AND FEDERAL EXPRESS

January 29, 2016

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Attn: Compliance Tracker



RE: Submittal of Flare Consent Decree Semi-Annual Report- 2nd Half 2015

EPA Officials:

This submittal includes Marathon Petroleum Company, LP (MPC) Michigan Refining Division's (MRD's) "Semi-Annual Report" as required by the Flare Consent Decree between US EPA and MPC.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

For further discussion of these plans or questions, please contact Robert Jones at (313) 297-6186.

Sincerely,
Marathon Petroleum Company LP
By: MPC Investment LLC, General Partner

Mr. David Roland, Deputy Assistant Secretary

cc: James Wilkins, MPC Robert Parish, EPA
Ruth Cade, MPC Patrick Foley, EPA
Virginia King, MPC Brian Dickens, EPA



**Marathon
Petroleum Company LP**

Flare Consent Decree Semi-Annual Report

Michigan Refining Division

Detroit Refinery

January 29, 2016

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SECTION 1 INTRODUCTION

In accordance with the Reporting Requirements (Section VIII) of the Consent Decree (CD) that was entered on August 30, 2012 between Marathon Petroleum Company, L.P. (MPC) and the United States of America on behalf of the Environmental Protection Agency (EPA), MPC submits the following semi-annual report. Paragraph 72 of the CD requires the submittal of a progress report semi-annually on January 31 and July 31 beginning 30 days after the end of the first semi-annual period after the Date of Entry until termination of the CD. This report contains information for the period beginning on July 1, 2015 and ending on December 31, 2015.

This semi-annual report addresses the requirements of the CD that were applicable during the reporting period. The CD requirements that are not yet applicable are not included in this report.

The Detroit Refinery operates 5 flares, all of which are “Covered Flares” subject to the flare requirements in the CD, except in cases where noted otherwise. The refinery operates the following flares: Cracking Plant, Crude, Unifiner, Alkylation, and Coker.

The contents of this semi-annual report are as follows:

- Section 2: Progress report and description of problem areas with respect to meeting the requirements of Section V of the CD;
- Section 3: Description of the status of the Mitigation Project;
- Section 4: Discussion of monitoring equipment/instrument downtime, Automatic Control System overrides, and emission standard exceedances; and
- Section 5: Annual emissions data for the prior calendar year

SECTION 2

COMPLIANCE REQUIREMENTS PROGRESS REPORT

2.1 Instrument and Monitoring Systems

CD Paragraph 16 – Flare Data and Monitoring Systems and Protocol Report

In accordance with the requirements of CD Paragraph 16, a Flare Data and Monitoring Systems and Protocol Report was submitted for each of the following flares at the Detroit Refinery by the required date as specified in Column B of Appendix 2.1. The submittal date for each flare is listed below:

- Cracking Plant Flare: April 30, 2010
- Crude Flare: October 29, 2010
- Unifiner Flare: October 29, 2010
- Alkylation Flare: October 29, 2010
- Coker Flare: December 31, 2012

Each report contained the following required information:

- The information, diagrams, and drawings specified in CD Paragraphs 1-8 of Appendix 1.8;
- A detailed description of each instrument and piece of monitoring equipment, including the specific model and manufacturer, that the Detroit Refinery has installed or will install in compliance with CD Paragraphs 18-23 of this CD (Paragraph 9 of Appendix 1.8);
- A narrative description of the monitoring methods and calculations that the Detroit Refinery shall use to comply with the requirements of CD Paragraphs 46-48 (Paragraph 10 of Appendix 1.8); and
- The identification of the calibration gases to be used to comply with Subparagraph V.B.1 of Appendix 1.10 (Paragraph 11 of Appendix 1.8).

CD Paragraphs 17 -23 – Installation and Operation of Monitoring Systems

In accordance with the requirements of CD Paragraph 17, except as specified below, the Detroit Refinery installed and commenced the operation of the instrumentation, controls, and monitoring systems detailed in CD Paragraphs 18-23 for each flare at the refinery by the required date as specified in Column C of Appendix 2.1. The compliance date for each flare is listed below.

- Cracking Plant Flare: September 30, 2012
- Crude Flare: September 30, 2012

- Unifiner Flare: September 30, 2012
- Alkylation Flare: September 30, 2012
- Coker Flare: June 30, 2013

The refinery did not incur any problems regarding compliance with the requirements for each of these monitoring systems for the flares listed above.

CD Paragraph 24 – Video Camera

In accordance with PTI Permit 63-08C, the Detroit Refinery installed color video monitors with date and time stamps on all Covered Flares to monitor for visible emissions on November 1, 2012.

CD Paragraph 25 – Instrumentation and Monitoring Systems: Optional Equipment for any Covered Flare

In accordance with the option allowed in CD Paragraph 25, the Detroit Refinery has chosen to install instrumentation to continuously measure and calculate flow of all pilot gas to the Coker flare as part of the calculation of the net heating value of the combustion zone (NHV_{cz}).

CD Paragraph 26 – Instrumentation and Monitoring Systems: Specifications

In accordance with the requirements of CD Paragraph 26, except as noted in individual paragraphs below, the Detroit Refinery has installed each instrumentation and monitoring system identified in CD Paragraphs 18 – 20 and 22 – 23 for each flare according to the specifications set forth in Appendix 1.10. The following paragraphs detail the specifications for each instrument and/or monitoring system.

Specifications for Vent Gas Flow Monitoring System (CD Paragraph 18)

The Detroit Refinery completed the installation of the GE DigitalFlow™ GM868 at each flare at the refinery by the required date (see discussion regarding CD Paragraph 17). Per the manufacturer's specifications and MPC's operational and Quality Assurance/Quality Control (QA/QC) procedures, the installation, operation, and calibration of the vent gas flow monitoring system meets or exceeds the specifications listed in Appendix 1.10 of the CD for a vent gas flow meter.

Specifications for Vent Gas Average Molecular Weight Analyzer (CD Paragraph 19)

As specifically allowed by Appendix 1.10, the GM868 vent gas flow meter that is installed at each flare at the refinery is equipped with a vent gas average molecular weight analyzer. Furthermore, per the manufacturer's specifications, the GM868 meets or exceeds the specifications listed in Appendix 1.10 of the CD for the vent gas average molecular weight analyzer. Therefore, by installation of the GM868, the Detroit Refinery meets or exceeds the specifications listed in Appendix 1.10 for the vent gas average molecular weight analyzer.

Specifications for Total Steam Flow Monitoring System (CD Paragraphs 20 & 21)

The Detroit Refinery completed installation of the GE DigitalFlow™ GS868 at each steam-assisted flare at the refinery by the required date (see discussion regarding CD Paragraph 17). Per the manufacturer's specifications and MPC's operational and QA/QC procedures, the installation, operation, and calibration of the total steam flow monitoring system meets or exceeds the specifications listed in Appendix 1.10 of the CD for a steam flow meter.

Specifications for Gas Chromatograph (GC) (CD Paragraph 22)

The Detroit Refinery completed installation of the Siemens MAXUM™ Edition II at each refinery flare by the required date (see discussion regarding CD Paragraph 17). Per the manufacturer's specifications and MPC's operational and QA/QC procedures, the installation, operation, and calibration of the MAXUM™ Edition II meets or exceeds the specifications listed in Appendix 1.10 of the CD for a gas chromatograph.

Specifications for Meteorological Station (MET Station) (CD Paragraph 23)

The Detroit Refinery completed the installation of the Young Ultrasonic Anemometer Model 85004 by the required date (see discussion regarding CD Paragraph 17). Per the manufacturer's specifications and MPC's QA/QC procedures, the MET station meets or exceeds the specifications listed in Appendix 1.10 of the CD for a meteorological station.

CD Paragraph 27 – Instrumentation and Monitoring Systems: Recording and Averaging Times

In accordance with the requirements of CD Paragraphs 27 and 55.a, except as noted below, the Detroit Refinery calculated and recorded data measurements and calculations for each parameter in accordance with the time intervals specified in CD Paragraph 27 by the required date, which is three months following the date listed in the discussion regarding CD Paragraph 17. The refinery has properly integrated each monitoring system into the Distributed Control System (DCS) and developed programming within the DCS to ensure that each parameter is recorded and averaged according to the specifications of this CD Paragraph.

CD Paragraph 28 – Operation and Maintenance

In accordance with the requirements of CD Paragraph 28, the Detroit Refinery operated each of the instruments and monitoring systems required in CD Paragraphs 18-20 and 22-23 on a continuous basis except for the following periods during this reporting period:

- (1) Malfunction of an instrument;
- (2) Maintenance following instrument malfunction;
- (3) Scheduled maintenance of an instrument in accordance with the manufacturer's recommended schedule;
- (4) QA/QC activities;
- (5) When the Covered Flare that the instrument or monitoring system is associated with is not in service.

In accordance with the requirements of CD Subparagraph 55.b, a record of the following information is kept for each instrument that exceeds 110 hours of downtime in any calendar quarter:

- Duration,
- Explanation of the cause(s) of the deviation, and
- Description of the corrective action(s) taken.

2.2 Waste Gas Minimization

CD Paragraph 30 – Initial Waste Gas Minimization Plan (WGMP)

In accordance with the requirements of CD Paragraph 30, the Detroit Refinery has submitted the Initial Waste Gas Minimization Plan (WGMP) for the Cracking Plant, Crude, Unifiner, Alkylation, and Coker flares by the required date, as specified in Column D of Appendix 2.1. The compliance date for each flare is listed below:

- Cracking Plant Flare: July 31, 2012
- Crude Flare: July 31, 2012
- Unifiner Flare: July 31, 2012
- Alkylation Flare: July 31, 2012
- Coker Flare: July 31, 2014

The Initial WGMP contains the following required information:

- Updates, if and as necessary, to the information, diagrams, and drawings provided in the Flare Data and Monitoring Systems and Protocol Report;
- Waste Gas Characterization and Mapping;
- Reduction previously realized;

- Planned reductions;
- Taking a Covered Flare Out of Service; and
- Prevention Measures

CD Paragraph 31 – First Updated Waste Gas Minimization Plan

The Detroit Refinery submitted its first update to the Waste Gas Minimization Plan by the deadline for all flares, except the Coker Flare, on July 31, 2013. This update covered the 12-month period following the period covered by the first WGMP. This updated WGMP included updates to Waste Gas Characterization and Mapping, Previously Realized Reductions, and Planned Reductions, as well as a review of any potential Root Cause Analysis reports. The First Updated WGMP for the Coker Flare was submitted by the deadline of July 31, 2015.

CD Paragraph 32 – Subsequent Updates to Waste Gas Minimization Plan

In accordance with the requirements of CD Paragraph 32, submissions of subsequent updates to the WGMP are included in each mid-year semi-annual report. An updated WGMP is due every July with the semi-annual report until the termination of the CD.

CD Paragraphs 33 & 34 – Waste Gas Minimization Plan: Implementation and Enforceability

In accordance with the requirements of CD Paragraph 33, except as noted below, the Detroit Refinery has implemented and will implement the actions described in the WGMP no later than the dates set forth in the WGMP. If no implementation date and/or no completion date for actions that do not require ongoing implementation are set forth in the WGMP, the implementation and/or completion date shall be deemed the date of the submission of the WGMP. The following table describes the schedule for implementation of specific actions detailed in the WGMP. The refinery does not anticipate a problem with the implementation schedule for each specific action detailed in the WGMP.

**Table 2-1
WGMP Planned Reductions**

Flare	Equipment	Project	Completion Date/Status
Cracking Plant	C3/C4 Splitter Bottoms Cooler PSV	Fix leaking relief valve 11PSV7946	12/31/2013- Complete
Cracking Plant	Propane Vaporizer	Upgrade Propane Vaporizer controls/indication to DCS operated from local (CSR project). Note: Reduction is once per 5 year TAR cycle.	3/31/2015- Complete

Flare	Equipment	Project	Completion Date/Status
Cracking Plant	CCR Debutanizer (14PSV8202)	Repair leaking relief valve 14PSV8202	12/31/2018* Scheduled to be completed during 2018 TAR.
Cracking Plant	Depentanizer Overhead Receiver (16PSV8420)	Repair leaking relief valve 16PSV8420	12/31/2018* Scheduled to be completed during 2018 TAR.
Crude	Fuel Gas KO Drum 4V4	Minimize the need to purge the Fuel Gas KO Drum to Flare	12/31/2014- Complete. Policies are in place to ensure KO drum is drained to flare only when necessary to remove liquid.
Crude	Crude Unit Sample Stations (Preflash, Debutanizer, Fuel Gas) and other Misc. items.	Install a Closed Loop Sample Station for the Debutanizer Overhead Liquid	12/31/2014- Complete. The current sample station was determined to be a closed loop sample station.
Unifiner	8V5 Hot Flash Drum Relief Valve 08PSV6819	Repair leaking relief valve	12/31/2013- Complete
Unifiner	8V5 Hot Flash Drum Relief Valve 08PSV6820	Repair leaking relief valve	12/31/2013- Complete
Unifiner	8V9 Low Pressure Flash Drum Relief Valve 08PSV6821	Repair leaking relief valve	12/31/2013- Complete
Unifiner	8V11 Stripper Overhead Receiver Relief Valve 08PSV6826	Repair leaking relief valve	12/31/2013- Complete
Unifiner	Rich Amine Flash Drum PSV Bypass Isolation Valve	Replace leaking isolation valve	12/31/2018- Scheduled to be completed during 2018 TAR.
Unifiner	Hot Flash Drum PSV Inlet Isolation Valve	Replace leaking isolation valve	12/31/2018- Scheduled to be completed during 2018 TAR.
Unifiner	LPG Railcar	Improve procedure to reduce venting during LPG loading	12/31/2014- Complete. Procedure minimizes venting to flare during LPG railcar loading.
Alkylation	09PSV7599 Bypass	Replace leaking bypass valve	12/31/2018- Scheduled to be completed during 2018 TAR.
Alkylation	09PSV7514 Bypass	Replace leaking bypass valve	12/31/2018- Scheduled to be completed during 2018 TAR.

Flare	Equipment	Project	Completion Date/Status
Coker	Flare Sweep Gas	Optimize sweep gas for minimum required flare header velocity.	12/31/2015- Analysis/optimization of the Coker Flare sweep gas has been completed.
Coker	Distillate Flush Oil Surge Drum (70PSV5081)	Repair leaking relief valve 70PSV5081	12/31/2018- Scheduled to be completed during 2018 TAR.

*These items require a unit shutdown to complete. Due to changes in unit Turnaround schedules, these items will not be able to be completed until the Fall 2018 Turnaround. The target dates for these reductions have been modified accordingly. The original target dates for the repair of 14 PSV8202 and 16PSV8420 were 10/31/2015 and 12/31/2015, respectively.

The refinery is taking specific steps to ensure that compliance is met by the specified date.

In accordance with the requirements of CD Paragraph 34, the refinery acknowledges and accepts that the specific actions in the WGMP are enforceable by the EPA.

CD Paragraph 35 – Root Cause Analysis for Reportable Flaring Incident

In accordance with the requirements of CD Subparagraph 35.a, the Detroit Refinery will conduct an investigation into the Root Cause(s) of each Reportable Flaring Incident by no later than forty-five days following the end of an Incident. Each internal report to document the Incident and the root cause analysis will include, at a minimum, the following:

- Date and time that the Incident started and ended;
- Volume of waste gas flared and quantity of Sulfur Dioxide (SO₂) and volatile organic compounds (VOCs) released, including the calculations that were used to determine that quantity;
- The steps, if any, that the refinery took to limit the duration of the Incident and the quantity of VOC and/or SO₂ emissions associated with the Incident;
- A detailed analysis that sets forth the root cause and all contributing causes of the Incident;
- An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of an Incident resulting from the same root cause or contributing causes in the future;
- If investigations and/or possible corrective actions are still underway 45 days after the Incident, a statement of the anticipated date by which a follow-up report fully conforming to the requirements will be completed.

The refinery does not anticipate any problems conducting and reporting Root Cause Analysis for each Reportable Flaring Incident. Pursuant to CD Paragraph 38, the Detroit Refinery

followed the provisions of MPC's PRI Consent Decree for any Acid gas or Hydrocarbon Flaring Incident that occurred during the reporting period.

In accordance with the requirements of CD Subparagraph 35.b, a summary of internal flaring incident reports which occurred during the reporting period is provided in Appendix 1 of this semi-annual report.

CD Paragraph 37 – Corrective Action Implementation

In accordance with the requirements of CD Paragraph 37, the Detroit Refinery will take, as expeditiously as practicable, such interim and/or long-term corrective actions, if any, as are consistent with good engineering practice to minimize the likelihood of a recurrence of the root cause and all contributing causes of the Reportable Flaring Incident.

The refinery does not anticipate any problems regarding the implementation of the identified corrective actions within the appropriate timeframe.

CD Paragraphs 39 & 40 – Limitations on Flaring

In accordance with the requirements of CD Paragraphs 39 and 40, the limitations on flaring are not yet applicable to the Detroit Refinery. Following the date by which the refinery will be subject to the flaring limitations of CD Paragraph 39, the appropriate Semi-Annual Report will contain a status update regarding the compliance with those flaring limitations.

2.3 Flare Combustion Efficiency

CD Paragraph 41 – Emission Standards and Work Practices Applicable to each Covered Flare upon the Date of Lodging

In accordance with the requirements of CD Paragraph 41, the Detroit Refinery has maintained compliance with the standards detailed in the paragraphs below, beginning on the Date of Lodging (April 5, 2012), as specified in this CD Paragraph. Deviations from this requirement are reported in the Title V semi-annual deviation report.

- CD Subparagraph 41.a – each flare was operated at all times when emissions may have been vented to it.
- CD Subparagraph 41.b – each flare is designed to operate with no Visible Emissions except for periods of startup, shutdown, and/or malfunction.
- CD Subparagraph 41.c – each flare was operated with a flame present at all times.
- CD Subparagraph 41.d – the refinery has complied with all applicable Subparts of 40 C.F.R. Parts 60, 61 or 63 that state how a particular flare must be monitored.
- CD Subparagraph 41.e – the refinery has implemented good air pollution control practices to minimize emissions from each flare.

In accordance with the requirements of CD Subparagraph 55.d, a record of the following information is kept for each deviation from the above standards:

- Duration of deviation,
- Explanation of the cause(s) of the deviation, and
- Description of corrective action(s) taken.

CD Paragraph 42 – Exit Velocity

In accordance with the requirements of CD Paragraph 42, the Detroit Refinery commenced the operation of the Cracking Plant, Crude, Unifiner, Alkylation, and Coker flares according to the specified exit velocity, except for periods of startup, shutdown, and/or malfunction by the required date, as specified in Column C of Appendix 2.1. Deviations from this requirement are reported in the Title V semi-annual deviation report. The compliance date for each flare is listed below:

- Cracking Plant Flare: September 30, 2012
- Crude Flare: September 30, 2012
- Unifiner Flare: September 30, 2012
- Alkylation Flare: September 30, 2012
- Coker Flare: June 30, 2013

CD Paragraphs 43 & 44 – Work Practice Standards for each Covered Flare

In accordance with the requirements of CD Paragraph 43, the Detroit Refinery installed and commenced operation of an Automatic Control System (ACS) that automates control of the supplemental gas flow rate and the total steam volumetric flow rate to the respective flare for the Cracking Plant, Crude, Unifiner, Alkylation, and Coker flares by the required date as specified in Column G of Appendix 2.1. The compliance date for each flare is listed below:

- Cracking Plant Flare: October 30, 2012
- Crude Flare: October 30, 2012
- Unifiner Flare: October 30, 2012
- Alkylation Flare: October 30, 2012
- Coker Flare: July 31, 2013

However, as allowed by CD Paragraph 44, the refinery may manually override the operation of the ACS for one of the following reasons:

- Malfunction of an instrument required to operate the ACS;
- Maintenance following malfunction of an instrument required to operate the ACS;
- Scheduled maintenance of an instrument required to operate the ACS in accordance with the manufacturer's recommended schedule;
- QA/QC activities on an instrument required to operate the ACS;

- Startup, Shutdown, or Malfunction of a process unit that is connected to the flare header;
- To stop smoke emissions that are occurring;
- To meet the Net Heating Value requirements;
- To prevent extinguishing the Flare;
- To protect personnel safety; and/or
- To stop Discontinuous Wake Dominated Flow.

In accordance with the requirements of CD Subparagraph 55.c, a record of the following information is kept for each time that the ACS was manually overridden:

- Date;
- Time;
- Duration;
- Reason for the override; and
- Corrective action(s) taken.

CD Paragraph 45 – Operation According to Design

In accordance with the requirements of CD Paragraph 45, the Detroit Refinery operates and maintains each flare in accordance with its design, except if, and only to the extent that, operation and maintenance of the flare in conformance with its design conflicts with compliance with one or more of the requirements of this CD.

CD Paragraph 46.a – Vent Gas Net Heating Value Standards for each Covered Flare

In accordance with the requirements of CD Subparagraph 46.a, the Detroit Refinery has operated each flare with a Net Heating Value of Vent Gas (NHV_{vg}) of greater than or equal to 300 British thermal units per standard cubic foot (Btu/scf), except during periods of maintenance and QA/QC activities. Deviations from this requirement are reported in the Title V semi-annual deviation report.

In accordance with the requirements of CD Subparagraph 55.d, a record of the following information is kept for each deviation from the standard of this CD Paragraph:

- Duration of deviation;
- Explanation of the cause(s) of the deviation; and
- Description of corrective action(s) taken.

CD Paragraph 46.b – Combustion Zone Net Heating Value Standards for each Covered Flare

The requirements of CD Subparagraph 46.b became applicable to the four existing flares June 30, 2013. In accordance with the requirements of CD Subparagraph 46.b, the Detroit Refinery has operated with a Combustion Zone Net Heating Value (NHV_{cz}) greater than the calculated Combustion Zone Net Heating Value Limit ($NHV_{cz-limit}$), except during periods of maintenance and QA/QC activities, and those periods outlined in Section 4 of this report. The Coker Flare became subject to Subparagraph 46.b on June 30, 2014.

CD Paragraph 47 – S/VG_{mass} and S/VG_{vol} (Total-Steam-Volumetric-Flow-Rate-to-Vent-Gas-Volumetric-Flow-Rate Ratio Standards)

In accordance with the requirements of CD Subparagraph 47.a, the Detroit Refinery has used best efforts to operate each existing flare (the Coker Flare became subject on June 30, 2014) so as to minimize the S/VG_{mass} and/or S/VG_{vol} at each flare, except for the following scenarios:

- Stop Smoke Emissions that are occurring;
- Meet the Net Heating Value requirements;
- Prevent extinguishing the Flare;
- Protect personnel safety; and/or
- If only pilot gas and/or purge gas is being vented to the flare

The following scenarios are also exempted from the requirements to minimize S/VG, provided that the scenarios do not exceed 110 hours in any calendar quarter for any instrument:

- Malfunction of an instrument used to minimize S/VG;
- Maintenance following malfunction of an instrument used to minimize S/VG;
- Scheduled maintenance of an instrument used to minimize S/VG in accordance with the manufacturer's recommended schedule; and/or
- QA/QC activities on an instrument needed to meet the requirements.

CD Paragraph 48 – Minimum Momentum Flux Ratio (MFR)

In accordance with the requirements of CD Subparagraph 48.b, the Detroit Refinery has identified in this semi-annual report which Momentum Flux Ratio (MFR) compliance option is selected for each of its flares. The refinery can change the selected option only after notifying EPA in a semi-annual report that it intends to make the change no less than 30 days after submission of the report. In the report, a reason for changing the compliance option shall be included. The following list identifies the option selected for each flare.

- The Detroit Refinery has chosen to maintain a minimum of MFR of 0.0030 on a 60-minute rolling average basis, rolled every 5 minutes for the Cracking Plant, Unifiner and Coker flares.
- The Detroit Refinery has chosen to maintain a proposed flare-specific MFR of 0.00015 for the Crude flare. It has been demonstrated that a discontinuous wake

dominated flow or measured combustion efficiency less than 98% will not occur for this flare-specific MFR.

- The Detroit Refinery has chosen to maintain a proposed flare-specific MFR of 0.00050 for the Alky flare. It has been demonstrated that a discontinuous wake dominated flow or measured combustion efficiency less than 98% will not occur for this flare-specific MFR.

CD Paragraph 49 – 98% Combustion Efficiency

In accordance with the requirements of CD Paragraph 49, the Detroit Refinery has operated each of its four existing flares with a Combustion Efficiency of greater than 98%, except during periods outlined in Section 4.4 of this report. The requirements of CD Subparagraph 49 became applicable to the Coker Flare on June 30, 2014.

2.4 Miscellaneous

CD Paragraph 56 – Temporary-Use Flares

The Detroit Refinery has not used any Temporary-Use Flares during the period covered under this Semi-Annual Report.

2.5 NSPS Subpart A, J, and Ja Applicability

CD Paragraph 58 – NSPS Subparts A and J

As set forth in CD Paragraph 58, the Detroit Refinery flares must comply with 40 C.F.R. Part 60 Subparts A and J by the date set forth in Column J of Appendix 2.1, which date is June 30, 2016.

CD Paragraph 59 – NSPS Subparts A and Ja

As set forth in CD Paragraph 59, the Detroit Refinery flares must comply with 40 C.F.R. Part 60 Subparts A and Ja by the date in Column J of Appendix 2.1 (June 30, 2016), or the date by which a modified flare must comply with the requirements of Subpart Ja, whichever is later. On and after the date in which a flare is subject to Subpart Ja, Subpart J no longer is applicable to that flare.

The Detroit Refinery began complying with the requirements of Subpart Ja on the Crude, Alky, and Coker flares January 1, 2016.

2.6 Incorporation of CD Requirements into Requirements into Federally Enforceable Permits

CD Paragraph 60 – Permits Needed to Meet Compliance Obligations

The Detroit Refinery has not needed to obtain any federal, state, or local permits or approvals in order to meet any compliance obligations under Section V of the CD.

CD Paragraph 61 – Permits to Ensure Survival of CD Limits and Standards after Termination of CD

The Detroit Refinery has obtained a non-Title V permit in order that the limits and standards imposed in CD Paragraph 61.b will survive the termination of the CD. The permit to install (PTI) number is 85-13 and was issued by the Michigan Department of Environmental Quality (MDEQ) on September 11, 2013.

CD Paragraph 62 – Modifications to Title V Operating Permits

In September 2013, the Detroit Refinery submitted the necessary forms to MDEQ to include PTI 85-13 into its Title V permit. Inclusion of PTI 85-13 into the Title V permit has been delayed due to pending Flare Consent Decree Revisions.

SECTION 3

ENVIRONMENTAL MITIGATION PROJECT

In accordance with Section VII of the CD, the Detroit Refinery was required to implement and commence operation of the Environmental Mitigation described for the purpose of VOC and benzene emissions reduction by September 30, 2013.

CD Paragraph 66 states that MPC shall install controls that conform to the requirements of the Benzene Waste Operations NESHAP (BWON), 40 C.F.R. Part 61, Subpart FF, on the Detroit Refinery's API/WWTP sludge handling facility that, as previously configured, is depicted as the "Existing System" in Appendix 2.6 of the CD.

The following is a list of initial actions performed to comply with the CD. Each project was completed by July 12, 2013. Any subsequent deviations from these requirements will be noted in this report and benzene-waste accounted for as required.

Sump Pit and Pump Adjacent to Tank 29-T12

The Detroit Refinery has removed the sludge pit and installed a vacuum truck transfer station, including strainers which are hard-piped to Tank 29-T12. The new system has no openings to the atmosphere.

Tank 29-T12

The Detroit Refinery has completed all necessary modifications to Tank 29-T12 to make it conform to the requirements of 40 C.F.R. § 61.343, and the Detroit Refinery hereafter operates and maintains Tank 29-T12 in conformance with 40 C.F.R. § 61.343.

Centrifuges 1 and 2

The Detroit Refinery initially removed one of the centrifuges as shown in Appendix 2.6 of the CD, however, due to high sludge volumes a second, temporary centrifuge has been installed. Note that both centrifuge vessels are controlled per 40 CFR § 61.343. Note also, that the screw conveyor associated with the permanent centrifuge is controlled per 40 CFR § 61.343, however, the screw conveyor associated with the temporary centrifuge is not. This operating scenario is utilized as the basis for the benzene-in-waste calculation for these streams.

Container for Centrifuge Solids

The Detroit Refinery replaced the previously uncontrolled, three-sided box for centrifuge solids with a container that was designed and installed in conformance with 40 C.F.R. § 61.345. However, this container is currently unable to be continuously controlled due to the moisture content in the system. Note also that the solids container for the temporary centrifuge is not controlled. The benzene content of the centrifuge solids in both containers is being counted toward the 6 Mg limit.

Frac Tank

The Detroit Refinery will no longer use the Frac Tank from the previous system to store oily water from the centrifuge. Instead, separate tanks for oil and water are utilized which conform to the requirements of 40 C.F.R. § 61.343. The Detroit Refinery shall hereafter operate and maintain the new tanks in conformance with 40 C.F.R. § 61.343.

Conveying Material between the Waste Management Units

All areas for conveyance of materials between the strainers and the roll-off boxes are hard-piped with no openings to the atmosphere except for the screw conveyor associated with the temporary centrifuge.

Closed Vent System and Control Device

The Detroit Refinery has eliminated emissions to the atmosphere from Tank 29-T12, the new centrifuge mixing tanks, the existing centrifuge and screw conveyor, and the previously utilized frac tank by designing, installing, operating and maintaining a closed vent system in conformance with 40 C.F.R. § 61.349(a)(1). The Detroit Refinery routes all vapors from this closed vent system to a control device that is designed, installed, operated, and maintained in conformance with 40 C.F.R. § 61.349(a)(2). The closed vent system and control device conform to all requirements of 40 C.F.R. § 61.349.

Modifications to Original Design

The following list details changes to the modifications described and depicted on the second schematic in Appendix 2.6 of the CD.

- A second controlled centrifuge was brought on-site. It receives contents from two mix tanks, and meets the requirements for control outlined in the Flare CD.
- The Frac Tank was replaced by separate tanks for oil and water.
- The roll-off boxes used for centrifuge solids are not controlled.

An updated diagram of the sludge handling facility is shown below.

Description of Problems Encountered (Subparagraph 68.b.)

No problems were encountered during the completion of this Project.

Description of the Environmental and Public Health Benefits (Subparagraph 68.c.)

As a result of the Environmental mitigation project, an estimated reduction in benzene emissions of 0.413 Mg/yr was achieved based on a comparison of 2012-2013 BWON data.

Certification that the Project Has Been Fully Implemented (Subparagraph 68.d.)

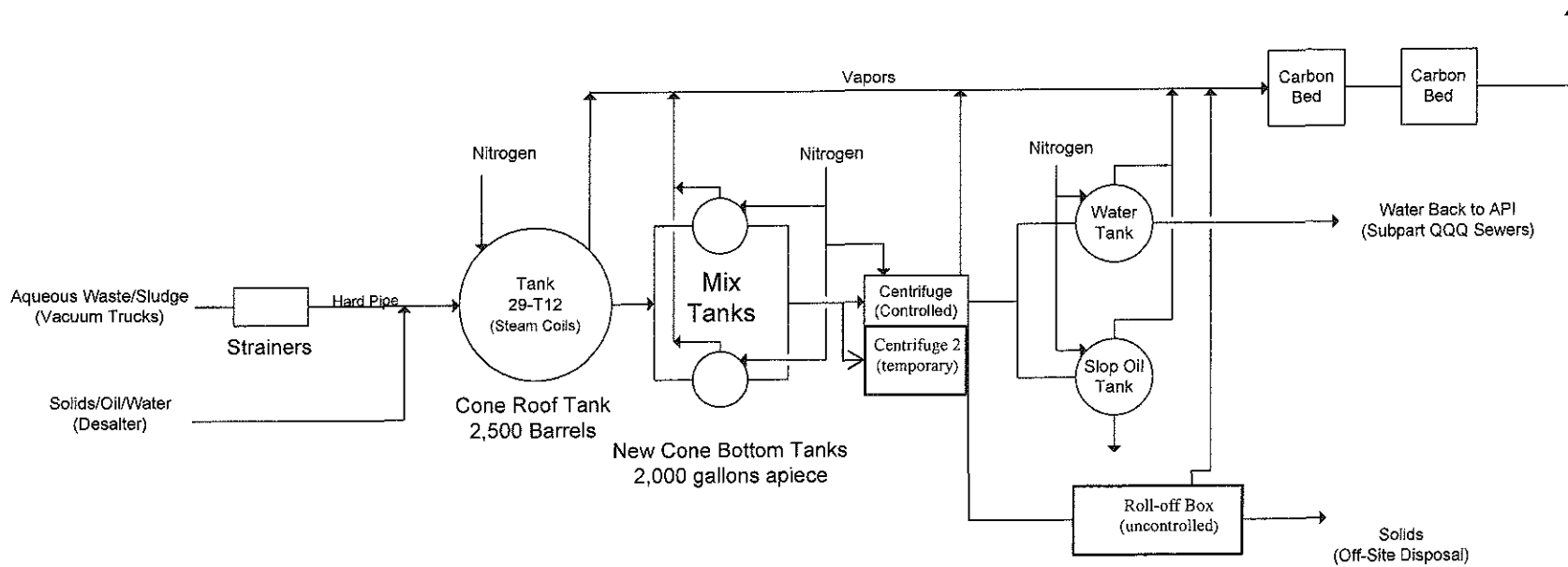
I certify under penalty of law that this information describing the full implementation of the Mitigation Project was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Marathon Petroleum Company LP

By: MPC Investment LLC, General Partner



David Roland, Deputy Assistant Secretary



SECTION 4

FLARE INSTRUMENTATION AND CONTROL SYSTEMS

4.1 Monitoring Instrument/Equipment Downtime

In accordance with the requirements of CD Subparagraph 70.a, Table 4-1 through Table 4-5 provides the required information regarding downtime during the 3rd and 4th quarters of 2015 of each monitoring instrument or equipment pursuant to CD Paragraphs 18 – 20 and 22 – 23.

Table 4-1
Cracking Plant Flare Monitoring Instrument/Equipment Downtime

Instrument/ Equipment	3rd Quarter Downtime Hours	3rd Quarter Downtime Hours as a % of Operating Hours	4th Quarter Downtime Hours	4th Quarter Downtime Hours as a % of Operating Hours
Vent Gas Flowmeter	5.0	0.23	0.0	0.00
Steam Flowmeter	0.0	0.00	0.0	0.00
Vent Gas Pressure Transmitter	0.0	0.00	0.0	0.00
Vent Gas Temperature Transmitter	0.0	0.00	0.0	0.00
Steam Pressure Transmitter	0.0	0.00	0.0	0.00
Steam Temperature Transmitter	0.0	0.00	0.0	0.00
Met Station	0.0	0.00	0.0	0.00
GC	4.0	0.18	62.0	2.81

Table 4-2
Crude Flare Monitoring Instrument/Equipment Downtime

Instrument/ Equipment	3rd Quarter Downtime Hours	3rd Quarter Downtime Hours as a % of Operating Hours	4th Quarter Downtime Hours	4th Quarter Downtime Hours as a % of Operating Hours
Vent Gas Flowmeter	0.0	0.00	0.0	0.00
Steam Flowmeter	0.0	0.00	0.0	0.00
Vent Gas Pressure Transmitter	0.0	0.00	0.0	0.00
Vent Gas Temperature Transmitter	0.0	0.00	0.0	0.00
Steam Pressure Transmitter	0.0	0.00	0.0	0.00
Steam Temperature Transmitter	0.0	0.00	0.0	0.00
GC	35.0	1.59	9.0	0.41

Table 4-3
Unifiner Flare Monitoring Instrument/Equipment Downtime

Instrument/ Equipment	3rd Quarter Downtime Hours	3rd Quarter Downtime Hours as a % of Operating Hours	4th Quarter Downtime Hours	4th Quarter Downtime Hours as a % of Operating Hours
Vent Gas Flowmeter	0.0	0.00	0.0	0.00
Steam Flowmeter	0.0	0.00	0.0	0.00
Vent Gas Pressure Transmitter	0.0	0.00	0.0	0.00
Vent Gas Temperature Transmitter	0.0	0.00	0.0	0.00

Instrument/ Equipment	3rd Quarter Downtime Hours	3rd Quarter Downtime Hours as a % of Operating Hours	4th Quarter Downtime Hours	4th Quarter Downtime Hours as a % of Operating Hours
Steam Pressure Transmitter	0.0	0.00	0.0	0.00
Steam Temperature Transmitter	0.0	0.00	0.0	0.00
GC	13.0	0.59	6.0	0.27

Table 4-4
Alkylation Flare Monitoring Instrument/Equipment Downtime

Instrument/ Equipment	3rd Quarter Downtime Hours	3rd Quarter Downtime Hours as a % of Operating Hours	4th Quarter Downtime Hours	4th Quarter Downtime Hours as a % of Operating Hours
Vent Gas Flowmeter	48.0	2.17	0.0	0.00
Steam Flowmeter	4.0	0.18	0.0	0.00
Vent Gas Pressure Transmitter	0.0	0.00	0.0	0.00
Vent Gas Temperature Transmitter	0.0	0.00	0.0	0.00
Steam Pressure Transmitter	4.0	0.18	0.0	0.00
Steam Temperature Transmitter	4.0	0.18	0.0	0.00
GC	18.0	0.82	28.0	1.27

Table 4-5
Coker Flare Monitoring Instrument/Equipment Downtime

Instrument/ Equipment	3rd Quarter Downtime Hours	3rd Quarter Downtime Hours as a % of Operating Hours	4th Quarter Downtime Hours	4th Quarter Downtime Hours as a % of Operating Hours
Vent Gas Flowmeter	2.0	0.09	0.0	0.00
Steam Flowmeter	2.0	0.09	0.0	0.00
Vent Gas Pressure Transmitter	0.0	0.00	0.0	0.00
Vent Gas Temperature Transmitter	0.0	0.00	0.0	0.00
Steam Pressure Transmitter	0.0	0.00	0.0	0.00
Steam Temperature Transmitter	0.0	0.00	0.0	0.00
GC	4.0	0.18	33.0	1.49

In accordance with the requirements of CD Subparagraph 70.b, Table 4-6 provides the required information regarding monitoring instrument/equipment downtime for instruments or equipment that exceed 110 hours of downtime per calendar quarter.

Table 4-6
**Monitoring Instrument/Equipment Downtime for > 110 Hours of Downtime in
Calendar Quarter**

Instrument/ Equipment	Date	Start Time	Duration (hours)	Cause	Corrective Action
N/A	N/A	N/A	N/A	N/A	N/A

4.2 Automatic Control System Override

In accordance with the requirements of CD Subparagraph 70.c, Table 4-7 and Table 4-8 provide the required information regarding the override of the steam and supplemental gas ACS respectively, required in CD Paragraph 43 during the 3rd and 4th quarters of 2015:

Table 4-7
Override of Automatic Steam Control System

Flare	3rd Quarter Overridden Hours	3rd Quarter Overridden Hours as a % of Flare Operating Hours	4th Quarter Overridden Hours	4th Quarter Overridden Hours as a % of Flare Operating Hours
Cracking Plant	55.6	2.52	39.8	1.80
Crude	49.9	2.26	53.9	2.44
Unifiner	81.3	3.68	107.7	4.88
Alkylation	72.2	3.27	57.8	2.62
Coker	18.9	0.86	76.8	3.48

Table 4-8
Override of Automatic Supplemental Gas Control System

Flare	3rd Quarter Overridden Hours	3rd Quarter Overridden Hours as a % of Flare Operating Hours	4th Quarter Overridden Hours	4th Quarter Overridden Hours as a % of Flare Operating Hours
Cracking Plant	28.8	1.30	18.3	0.83
Crude	45.0	2.04	45.4	2.06
Unifiner	21.1	0.96	73.3	3.32
Alkylation	48.0	2.17	34.4	1.56
Coker	0.5	0.02	7.9	0.36

A list of reasons for the override of each flare over 110 hours per calendar quarter is as follows:

Table 4-9
Additional Information for Override of Automatic Control System

Flare	Date	Steam ACS Override Hours	Supplemental Gas ACS Override Hours	Reason for the Override	Corrective Action(s) Taken
N/A	N/A	N/A	N/A	N/A	N/A

4.3 Inapplicability of Emission Standards

In accordance with the requirements of CD Subparagraph 70.e, Table 4-9 provides the required information regarding the periods of time during which the requirements of CD Paragraphs 46-49 were inapplicable (ie, the only gases being vented were Purge Gas and/or Pilot Gas):

Table 4-10
Inapplicability of Emissions Standards

Flare	3 rd Quarter Hours	3 rd Quarter Hours as a % of Flare Operating Hours	4 th Quarter Hours	4 th Quarter Hours as a % of Flare Operating Hours
Coker	1343.0	60.82	1382.3	62.60

4.4 Exceedances of Emission Standards

In accordance with the requirements of CD Subparagraph 70.f, Table 4-11 through Table 4-14.b provides the required information regarding the exceedances of emissions standards in CD Paragraphs 46.b, 47.b, 48.c, and 49 during the 3rd and 4th quarters of 2015:

Table 4-11
Cracking Plant Flare Exceedances of Emissions Standards

Emission Standard	3 rd Quarter Hours	3 rd Quarter Hours as a % of Flare Operating Hours	4 th Quarter Hours	4 th Quarter Hours as a % of Flare Operating Hours
NHV of Combustion	6.5	0.29	1.3	0.06

Emission Standard	3rd Quarter Hours	3rd Quarter Hours as a % of Flare Operating Hours	4th Quarter Hours	4th Quarter Hours as a % of Flare Operating Hours
Zone 3 Hour Average				
S/VG Ratio	0.0	0.00	0.0	0.00
MFR	0.0	0.00	0.0	0.00
Combustion Efficiency	6.5	0.29	1.3	0.06

Table 4-12
Crude Flare Exceedances of Emissions Standards

Emission Standard	3rd Quarter Hours	3rd Quarter Hours as a % of Flare Operating Hours	4th Quarter Hours	4th Quarter Hours as a % of Flare Operating Hours
NHV of Combustion Zone 3 Hour Average	1.8	0.08	20.0	0.91
S/VG Ratio	0.0	0.00	3.3	0.15
MFR	0.0	0.00	5.6	0.25
Combustion Efficiency	1.8	0.08	24.7	1.12

Table 4-13
Alkylation Flare Exceedances of Emissions Standards

Emission Standard	3rd Quarter Hours	3rd Quarter Hours as a % of Flare Operating Hours	4th Quarter Hours	4th Quarter Hours as a % of Flare Operating Hours
NHV of Combustion Zone 3 Hour Average	0.0	0.00	3.3	0.15
S/VG Ratio	0.0	0.00	0.8	0.04
MFR	9.3	0.42	0.0	0.00
Combustion Efficiency	9.3	0.42	4.1	0.19

Table 4-14a
Raw Unifiner Flare Exceedances of Emissions Standards

Emission Standard	3rd Quarter Hours	3rd Quarter Hours as a % of Flare Operating Hours	4th Quarter Hours	4th Quarter Hours as a % of Flare Operating Hours
NHV of Combustion Zone 3 Hour Average	3.8	0.17	10.5	0.48
S/VG Ratio	21.7	0.98	15.4	0.70
MFR	0.0	0.00	2.6	0.12
Combustion Efficiency	23.0	1.04	21.2	0.96

Table 4-14b
Corrected Unifiner Flare Exceedances of Emissions Standards

Emission Standard	3rd Quarter Hours	3rd Quarter Hours as a % of Flare Operating Hours	4th Quarter Hours	4th Quarter Hours as a % of Flare Operating Hours
NHV of Combustion Zone 3 Hour Average	0.0	0.00	1.5	0.07
S/VG Ratio	0.0	0.00	0.2	0.01
MFR	0.0	0.00	2.2	0.10
Combustion Efficiency	0.0	0.00	3.8	0.17

Table 4-14a includes data from the Unifiner flare that has not been corrected, meaning that these values are taken directly from the tracking system without consideration for the malfunctioning equipment. Table 4-14b contains the data that MRD believes to be the most reflective of the performance on the system.

The Unifiner Flare Vent Gas Flow meter is experiencing spikes and dips in the flow rates. The flow meter reads erratically, resulting in steam-to-vent gas control issues. The cause of the flow meter issues was originally believed to be caused by moisture in the flare system. However, MRD has performed troubleshooting, including repairing a steam leak in the system, that has indicated moisture is not the cause of the erratic readings. MRD has chosen to provide a more accurate assessment of the values in the “Corrected” table 4-13b.

MRD is working to pursue different flow meter configurations and options that are compliant with the requirements of CD Paragraph 19.

Table 4-15
Coker Flare Exceedances of Emissions Standards

Emission Standard	3rd Quarter Hours	3rd Quarter Hours as a % of Flare Operating Hours	4th Quarter Hours	4th Quarter Hours as a % of Flare Operating Hours
NHV of Combustion Zone 3 Hour Average	0.0	0.00	1.3	0.06
S/VG Ratio	0.2	0.01	4.8	0.22
MFR	0.7	0.03	3.4	0.15
Combustion Efficiency	0.8	0.04	9.5	0.43

4.5 Flaring Limitation Exceedances

In accordance with the requirements of CD Subparagraph 70.h, which references the flaring limitations found in CD Paragraphs 39 and 40, the limitations on flaring are not yet applicable to the Detroit Refinery. Following the date by which the refinery will be subject to the flaring limitations of CD Paragraphs 39 and 40, the appropriate Semi-Annual Report will contain the required information for exceedances of the flaring limitations.

SECTION 5

ANNUAL EMISSIONS DATA

CD Paragraph 71 – Emissions Data

In the semi-annual report that is submitted on July 31 of each year, the Detroit Refinery shall provide, for each flare, for the prior calendar year, the amount of emissions of the following compounds (in tons per year): VOCs, SO₂, Hydrogen Sulfide (H₂S), Carbon Dioxide (CO₂), Methane, and Ethane. Since this is not a mid-year submittal, emissions data are not required to be reported.

SECTION 6

APPENDICES TO SEMI-ANNUAL REPORT

Appendix 1

Summary of Internal Flaring Incident Reports

Summary of Internal Flaring Incident Reports

No.	Incident No. or ID	Incident Description	Causal Factors	Root Causes	Corrective Action Recommendations	Incident Date	Incident Duration
1	145045	DHT 77E7 Tube Leak- flaring through 100# depressuring system				9/29/2015	~2
		1	77PSV6479 Bellows Failure	Design/Design Specs/ Problem Not Anticipated	Review PSV design specifications with corporate SME to prevent new installations from susceptibility to SCC or other failure mechanisms found in the metallurgical failure analysis of 77PSV6479. (INC-145045)		
		2			Based on the metallurgical failure analysis results of 77PSV6479, review other similar service bellows and issue a memo to correct any deficiencies. (INC-145045)		
		3			Upgrade 77PSV6479 based on the results of the metallurgical failure analysis. (INC-145045)		
		4	77E7 Tube Rupture	To Be Determined	Complete the metallurgical failure analysis for 77E7B and PSV bellows and present findings to Refinery Management. (INC-145045)		
2	145752	Reportable Flaring Incident During Fall 2015 Shutdown for Turnaround				10/9/2015	~3
		1	FGR shutdown logic trips compressors for external conditions (eg. Suction temperature).	Human Performance Difficulty, Human Engineering, HMI, Controls NI	Investigate if the current FGR system supports the use of a "recycle mode" trip (100% spillback) for external shutdowns (eg high suction temperature). The future FGR logic for the Unifiner and Coker Flares includes recycle mode trips for external shutdown cases.		
		2	Supplemental gas valve was closed during final steam-out flare sample (Crude Flare).	Human Performance Difficulty, Human Engineering, HMI, Controls NI	Revise Crude Unit Shutdown Procedure to include a step to baseload the supplemental natural gas on the Crude Flare @100%OP during unit steam-out.		
3	145742	DHT 300# deP valve leaking- DHT startup				10/22/2015	~2
		1	The root cause of this flaring incident has been identified as the DHT 300# de-pressurization valve leaking through. This is a repeat of a prior incident (INC-51236) that occurred in December 2013 that had the same root cause. As a result of that incident, an ER has been generated (14-140) to develop an alternative design for the de-pressurization valves with implementation in 2018. Per paragraph 36 of the Flare CD, if a reportable incident has the same root cause as a prior incident, MPC may cross-reference and utilize the prior report. That is the course of action chosen for this particular incident. Nonetheless, lessons learned and additional recommendations were developed for this incident to prevent reoccurrence between now and 2018.		Include a note box in both the DHT start-up and internal/recycle procedures to notify Cx 6 prior to S/U to ensure that the FGR system is operational (INC-145742)		
		2			Develop an SO2 mass emissions PI tag for each flare. Consider means of notification such as alarms, texts, etc. (INC-145742)		
4	146518	77E7A Tube Leak- DHT shutdown				12/10/2015	~2
		1	The presence of chlorides and trace amounts of water and was not considered during the initial design of the 77E7s.	Equipment Difficulty-Design- Design Specs- Problem Not Anticipated- Equipment Environment Not Considered	Upgrade the metallurgy of the 77E7A/B tubes to Alloy 625 during the 2016 DHT outage.		
		2			Complete metallurgical failure analysis on 77E7A to confirm that the failure mechanism is consistent with the findings from 77E7B. Share the findings of the analysis with the affected workgroups.		
5	146646	Shutdown DHT per release on HPHS				12/15/2015	~1